COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

REQUEST OF LOUISVILLE GAS AND ELECTRIC COMPANY TO CANCEL AND WITHDRAW THE TARIFFS FOR ITS RESPONSIVE PRICING AND SMART METERING PILOT PROGRAM	))))	CASE NO. 2011-00440

ORDER

On October 31, 2011, Louisville Gas and Electric Company ("LG&E") submitted a request to cancel and withdraw its Residential Responsive Pricing Service tariff ("Rate RRP") and General Responsive Pricing Service tariff ("Rate GRP") effective January 1, 2012. On November 14, 2011, the Commission suspended the proposed tariff cancelling Rate RRP and Rate GRP and established this proceeding to consider the reasonableness of LG&E's request.

On July 12, 2007, the Commission issued an Order in Case No. 2007-00117[1] approving a three-year Smart Metering Pilot Program ("Smart Meter Pilot") for a limited number of LG&E's customers. LG&E's Rate RRP and Rate GRP tariffs were approved for use under the Smart Meter Pilot. The July 12, 2007 Order was amended on October 7, 2008 to allow up to 15 employees of the General Electric Company ("GE") to participate in the Smart Meter Pilot.

[1] Case No. 2007-00117, Application of Louisville Gas and Electric Company for an Order Approving a Responsive Pricing and Smart Metering Pilot Program (Ky. PSC July 12, 2007).

Background

Pursuant to the terms of a Settlement Agreement it entered into in its 2003 rate case,[2] LG&E began developing a residential real-time pricing pilot program. However, once the Commission issued its Order in Administrative Case No. 2006-00045[3] to review the new Public Utility Regulatory Policies Act of 1978 ("PURPA") standard relating to time-based metering, LG&E determined that it would be in its customers' best interest to delay implementation until the Commission addressed the PURPA time-based metering standard. Although we did not require the time-based metering standard be adopted, the Commission took notice of LG&E's rate case Settlement Agreement in our Final Order in Administrative Case No. 2006-00045 and, among other things, required LG&E to "finalize its proposed residential real-time pilot pricing program in accordance with the settlement in Case No. 2003-00433 and submit the plan for Commission consideration within 90 days of the date of this Order."[4] LG&E complied with this requirement and submitted the application referenced above, which was docketed as Case No. 2007-00117.

As required by the Commission's Order in Case No. 2007-00117, LG&E submitted annual reports on April 1, 2009, April 1, 2010, and April 1, 2011. Its final evaluation report ("Final Report") was submitted on July 1, 2011. Commission Staff issued a request for information on December 22, 2011 to which LG&E responded on

[2] Case No. 2003-00433, An Adjustment of the Gas and Electric Rates, Terms, and Conditions of Louisville Gas and Electric Company (Ky. PSC June 30, 2004).

[3] Administrative Case No. 2006-00045, Consideration of the Requirements of the Federal Energy Policy Act of 2005 Regarding Time-Based Metering, Demand Response, and Interconnection Service (Ky. PSC Dec. 21, 2006).

[4] *Id.* Ordering paragraph 2 at 18.

January 6, 2012. Commission Staff held an informal conference ("IC") with representatives of LG&E on January 17, 2012. Following the IC, LG&E provided additional information and clarification regarding the results of the program along with additional information regarding the cost to continue the pilot.

Summary Description of the Smart Meter Pilot

The Smart Meter Pilot incorporates a price-responsive rate structure with time-of-use and real-time (critical peak pricing) components. The time-of-use component provides known rates for known periods that apply about 99 percent of the time. The weekday and weekend hours are divided into three time-of-use periods, each with different rates ranging from low to medium to high. The real-time component has a published rate that is approximately five times higher than the standard residential tariff rate during hours of critical peak period ("CPP") generation. LG&E limited the critical peak pricing period to no more than 80 hours per year (approximately one percent of the time) and participants received notice at least one-half hour before critical peak pricing began in order to shift usage.

LG&E installed smart meters equipped with electronic cards that provide two-way communication. The smart meters allow LG&E to record and transmit a customer's usage during different pricing periods. LG&E also installed energy-use display equipment (in-home monitors) to allow participants to receive the pricing signal from LG&E indicating the rate that was currently applicable. These in-home monitors also provide the half-hour notice of the critical peak pricing period. Finally, LG&E equipped participants with programmable thermostats and load control switches in order to enable participants to maximize energy savings and to allow participants time to shift any non-critical load to a non-critical time period. The thermostats are able to receive pricing period signals.

LG&E drew its participants and a control group on a voluntary basis from four metering routes (about 2,000 customers). LG&E's plan was to draw 150 Smart Meter Pilot participants from these four meter reading routes. The remainder of the customers was considered as a control group that received various levels of equipment but were not direct participants in the pilot. Members of the control group were not on the pilot program tariffs. The control group was to receive the following types of equipment: 150 customers would receive programmable thermostats and in-home information displays; 150 customers would receive programmable thermostats and load control devices; 100 customers would only receive the in-home information displays; and the remaining customers would only receive the smart meters.

LG&E's Reports

LG&E submitted its first annual report on April 1, 2009 for the 2008 calendar year. LG&E reported that 102 Residential customers (including the GE customers) and two General Services customers were participating in the Smart Meter Pilot by the end of 2008.[5] GoodCents Solutions, LG&E's consultant that reviewed the results of the Smart Meter Pilot, found that, for Summer 2008 and Winter 2008, the pilot participants used more energy than the regular customers and that weekend usage for the participants was higher than weekday usage. It also found, however, that there was a slight decrease in energy usage by the participants during high price and critical peak

[5] 2008 Responsive Pricing and Smart Metering Pilot Program Annual Report for Louisville Gas and Electric Company at 7 (filed Apr. 1, 2009).

periods.[6] LG&E reported that customer feedback had been positive and that load reductions could be achieved with time-of-use pricing and CPP events.[7]

As noted in its April 1, 2010 Annual Report (covering the 2009 calendar year), the number of Residential participants declined to 94 by December 2009 but the number of General Service customers grew to four.[8] LG&E contracted with an outside market research firm, Horizon InSight ("Horizon"), to assess the Smart Meter Pilot with respect to customer satisfaction.[9] According to the Horizon Report, the main reason cited for enrollment in and satisfaction with the program was the prospect of saving money. Not surprisingly, a customer's reported satisfaction with the program was highly correlated to their ability to quantify actual savings.[10] Horizon also reported that regardless of cost savings, customers stated that they felt a greater sense of "empowerment" as a direct result of the program. Therefore, Horizon noted that while financial savings was a significant focal point of the program, providing a sense of

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[6] Schmidt Consulting Services, Demand Side Management Pilots, M & V CPP Report, A Report to LG&E from Good Cents Solutions, March 2009 at 41 (filed Apr. 1, 2009).

[7] 2008 Responsive Pricing and Smart Metering Pilot Program Annual Report for Louisville Gas and Electric Company at 13 (filed Apr. 1, 2009).

[8] Responsive Pricing and Smart Metering Pilot Program Annual Report for Louisville Gas and Electric Company at 8 (filed Apr. 1, 2010).

[9] Smart Rate Program Assessment, Executive Summary Report, Horizon InSight (filed Dec. 9, 2009).

[10] Responsive Pricing and Smart Metering Pilot Program Annual Report for Louisville Gas and Electric Company at 20 (filed Apr. 1, 2010).

"consumer control" may actually be the more powerful motivator for influencing ongoing customer engagement and retention.[11]

LG&E submitted its final report regarding the Smart Meter Pilot on July 1, 2011. Generally, LG&E found that the analysis of the three summers of data demonstrates that participating customers consistently decreased their energy usage slightly in high and critical peak pricing periods; however, they used more energy overall throughout the summer periods compared to non-participants.[12] In addition, research performed by GoodCents Solutions found that the Smart Meter Pilot had a positive effect on customers. Data showed that the pilot program had influenced the following: awareness of home energy consumption; motivation to change behaviors related to energy usage; understanding of ability to control energy consumption behaviors; and willingness to be accountable for home energy usage.[13]

In the Recommendations section of the Final Report, LG&E states that the Smart Meter Pilot consisting of approximately 2,000 meters is now complete and that it seeks to discontinue the pilot. LG&E states that it would leave the existing meters in place and begin collecting meter readings through normal meter reading operations to ensure constant operational performance and continuous customer service. Pending Commission approval, LG&E would communicate the end of the Smart Meter Pilot with the remaining participants and place them on the standard rate schedule. In addition,

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[11] *Id.*

[12] Responsive Pricing and Smart Metering Pilot Program Final Report, Kentucky Public Service Commission, at 10 to 11 (filed July 1, 2011).

[13] *Id.* at 13.

LG&E would plan to provide the Smart Meter Pilot participants with an opportunity to participate in future time-of-use rate pilots, if they desired.[14]

<u>Other Findings from the Smart Meter Pilot</u>

While LG&E found that participants in the Smart Meter Pilot consistently shifted load from higher-priced weekday hours to lower-priced weekend hours, the participants, overall, used more energy than non-participants. In addition, LG&E noticed there was a "bounce back" effect after the CPP events where participants turned things back on sooner than expected. As a result, there was a savings of up to 1 kW per participant but the bounce back effect resulted in a peak that was up to 0.8 kW higher than the pre-event peak. LG&E noted that the GE participants with smart appliances showed the largest reductions during CPP events.

LG&E also explained that there are several technology (equipment and software) issues that are part of the basis for its request to discontinue the pilot. LG&E found that the meters were accurate in measuring consumption but that it had not been able to fully test and evaluate two-way communications because appropriate systems were not readily available or economically feasible during the Smart Meter Pilot period. LG&E stated that the hardware and software employed had become out dated and limited in performance compared to more recently available technology. In addition, the third-party vendor that was responsible for meter data management has determined that it will no longer support the meter data platform.

According to LG&E, the annual cost to maintain the existing technology is approximately $240,000, and, even at that cost, it is unknown how long LG&E can

[14] *Id.* at 15.

maintain the program.[15] It would cost approximately $500,000 to develop a meter data management system and revamp the program. Revamping the program would also require replacement of the existing smart meters, communications equipment, and premises devices.[16] At the IC, LG&E stated that it estimates that the revamped program would support about 1,000 participants. In its 2010 Annual Report, LG&E reported a total program cost of $2,033,000 through December 2010.[17]

According to LG&E's request to cancel and withdraw its RRP and GRP tariffs, the Smart Meter Pilot was designed to provide residential and commercial customers a variable rate schedule for their energy usage and to determine whether customers would change their electric usage behavior if they were provided either economic incentives or additional information related to their energy cost.[18] LG&E reported that the results showed that there were load reductions, shifts in peak usage to off-peak periods, but that customers receiving CPP signals created higher peaks and consumed more energy.[19]

In its Final Report, LG&E stated that it "...believes that pilots and trials designed to understand customer behavior (i.e., acceptance, use, sustainability of savings, etc.) and investigate emerging technology integration into existing system infrastructure

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[15] LG&E's Response to Staff's Request for Information of December 22, 2011, Item 1, b(1) (filed Jan. 6, 2012).

[16] *Id.*, Item 9.

[17] *Id.*, Item 1, b(4) and 2010 Annual Report at 17 (filed Apr. 1, 2011).

[18] Application (filed Oct. 31, 2011).

[19] *Id.* at 1-2.

should be continued."[20] LG&E also broadly outlined the objectives it believed should be the focus of future pilots. Finally, LG&E stated that it plans to continue its dynamic pricing and smart metering efforts while developing and refining a number of issues and plans to ensure that deployment does not outpace technology.[21] At the IC, LG&E stated that it had discussed the possibility of developing a new smart meter pilot with its Demand-Side Management ("DSM") Energy Efficiency Advisory Group ("EEAG") and was working to develop a practical business case to pursue another pilot.

Based on its review of the record in this proceeding, the Commission finds that LG&E should be allowed to discontinue its Smart Meter Pilot, and cancel and withdraw its Rate RRP and Rate GRP tariffs. The Commission, however, notes that the Smart Meter Pilot was Kentucky's first (and only) program to offer dynamic pricing, and in-home displays to customers of a jurisdictional electric utility.[22] We commend LG&E for its efforts and strongly encourage LG&E to continue its efforts with its DSM EEAG to develop a new dynamic pricing program for Residential and General Service customers. The Commission believes that the information gained and the lessons learned will be invaluable in allowing LG&E, along with its DSM EEAG, to craft a new program that will improve upon the results of the Smart Meter Pilot.

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[20] Responsive Pricing and Smart Metering Pilot Program Final Report, Kentucky Public Service Commission, at 15 (filed July 1, 2011).

[21] *Id.* at 16.

[22] In two recent proceedings, Owen Electric Cooperative, Inc. broadly described a similar effort it plans to undertake but no formal request has been made to the Commission at this time.

Although the Commission did not require adoption of the new PURPA standards regarding dynamic pricing arising from the Energy Policy Act of 2005, it did direct each jurisdictional electric utility to give further consideration to demand response and time-based products.[23] In its review of the new PURPA Smart Grid Investment standard arising from the Energy Independence and Security Act of 2007, the Commission directed jurisdictional electric utilities to adopt the Smart Grid Investment Standard.[24] [25] The Commission, therefore, believes that it has established a record of its support for consideration of dynamic pricing pilot programs.

The Commission has also determined that it will monitor LG&E's progress by requiring periodic reports. We find that LG&E should submit a report describing its efforts to develop a new program every three months until it has submitted a dynamic pricing or smart meter application for the Commission's consideration.

IT IS HEREBY ORDERED that:

1. LG&E shall be allowed to discontinue its Smart Meter Pilot, and cancel and withdraw its Rate RRP and Rate GRP tariffs.

2. LG&E shall submit a report describing its efforts to develop a new program every three months until it has submitted a dynamic pricing or smart meter application

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[23] Administrative Case No. 2006-00045, Consideration of the Requirements of the Federal Energy Policy Act of 2005 Regarding Time-Based Metering, Demand Response, and Interconnection Service (Ky. PSC Dec. 21, 2006) at 10 to 11.

[24] Administrative Case No. 2008-00408, Consideration of the New Federal Standards of the Energy Independence and Security Act of 2007 (Ky. PSC Oct. 6, 2011) at 127.

[25] The Commission granted rehearing on the adoption of the Smart Grid Investment Standard on November 17, 2011.

for the Commission's consideration, with its first report to be filed three months from the date of this Order.

By the Commission

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KENTUCKY PUBLIC SERVICE COMMISSION

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